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A draft regulation to prevent the release of fluorocarbon refrigerants: Backgrounder

On May 17, 1993, Environment and Energy Minister Bud Wildman announced a 30-day public comment period for a draft regulation that will prevent the potential release of tens of thousands of tonnes of ozone-depleting fluorocarbons from refrigerators and air conditioning equipment. The regulation is expected to become law this summer.

Some of these fluorocarbons – the most common are chlorofluorocarbons (CFCs) – are released into the atmosphere when refrigeration equipment is repaired or discarded. These chemicals deplete the ozone layer in the upper atmosphere which filters out cancer-causing ultraviolet radiation from the sun.

As part of its building-block strategy, the ministry is working step-by-step with industry towards the elimination of ozone-depleting substances. With this draft regulation and measures taken under the Ontario 1989 regulation, 90% of the sources of ozone-depleting substances will be controlled. These sources include foams, aerosols, and refrigeration equipment.

Implementation of the regulation will include a training, certification and communications program that is being developed in co-operation with industry.

In the coming months the ministry will be announcing steps to deal with halons in fire extinguishers and other ozone-depleting substances primarily used as solvents in the metal finishing industry.

THE DRAFT REGULATION

Refrigerants designated to be harmful to the ozone layer

Refrigerants which contain chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), or hydrofluorocarbons (HFCs) are designated as "ozone-depleting substances". They are also called "fluorocarbon refrigerants" for short.

These refrigerants are commonly used in domestic, commercial and industrial refrigerators, freezers, and air conditioning systems, referred to as "refrigeration equipment" for short.

No venting of fluorocarbon refrigerants

No one can release a fluorocarbon refrigerant into the environment. Similarly, no one can add a fluorocarbon refrigerant into refrigeration equipment, such as for testing purposes, in a way that would cause the refrigerant to be released into the environment.

Phase-out of CFC and HCFC refrigerants in motor vehicle air conditioning systems

New car, truck, and other motor vehicle air conditioning systems installed after December 31, 1995, must not contain CFCs and HCFCs. However, air conditioning systems with CFCs and HCFCs in service prior to that date may continue to be used. Only recycled CFCs and HCFCs will be available for servicing these systems.

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Fines and penalties

The regulation will be passed under the authority of the *Environmental Protection Act*. Persons and companies convicted for offences under the act are subject to fines and other penalties. The basic fine structure is as follows:

- For individuals: a maximum fine of $10,000 for each day that an offence occurs on a first conviction, and a maximum fine of $25,000 for each day that an offence occurs on each subsequent conviction.
- For companies: a maximum fine of $50,000 for each day that an offence occurs on first conviction, and a maximum fine of $100,000 for each day that an offence occurs on each subsequent conviction.

In some circumstances, even more onerous fines apply and there can be a possibility of imprisonment.

Who's affected?

There are four groups of people affected by the regulation:

- Those who own refrigeration equipment such as homeowners, car and truck owners, building owners, and business owners;
- Those who repair and refill refrigeration equipment such as service technicians in the automotive and appliance industries;
- Those who sell fluorocarbon refrigerants such as refrigerant producers and wholesalers selling refrigerants to automotive and appliance manufacturing and service companies;
- Those who collect used refrigeration equipment for disposal and recycling such as municipal waste management and public works departments, salvage companies, and retailers who collect old refrigerators and air conditioners.

Requirements for people who own refrigeration equipment containing fluorocarbon refrigerants

As of January 1, 1994:

- They must have leaking air conditioners (vehicle and home) and refrigerators repaired and refilled by certified persons. These certified persons must have an "Ozone Depletion Prevention Card" which shows that they have completed a course and an examination approved by the Ministry of the Environment and Energy on the use and handling of ozone-depleting substances in refrigeration.
- They can have air conditioners (vehicle and home) and refrigerators dismantled and disposed of only after they have been tagged/labelled free of ozone-depleting substances by a certified person.
- They must have leaking refrigeration equipment fixed and tagged by a certified person before it can be refilled with a fluorocarbon refrigerant.
- They will not be able to buy fluorocarbon refrigerants unless they are a wholesale refrigerant supplier or they are a certified person.

Requirements for people who repair and refill refrigeration equipment containing fluorocarbon refrigerants

As of January 1, 1994:

- To fix refrigeration equipment, they must have in their possession an "Ozone Depletion Prevention Card" which shows that they have completed a course and an examination approved by the Ministry of Environment and Energy on the use and handling of ozone-depleting substances in refrigeration.
- After they test refrigeration equipment for leaks, they must put a notice or tag on the equipment. They must inform the owner of the equipment about the results of the test and keep records of the test for at least three years.

- They can refill refrigeration equipment only if it has been tagged "leak free." If the tag is more than six months old or if it looks like the equipment has been damaged, the equipment cannot be refilled with fluorocarbon refrigerants.
- If they drain refrigeration equipment or determine that it is empty, they must place a notice/tag on all refrigeration equipment indicating that it no longer contains the fluorocarbon refrigerant.
- They cannot dismantle or dispose of refrigeration equipment unless it is certified empty.
- They cannot throw out a storage container used for fluorocarbon refrigerants, and they must make a reasonable effort to refill or recycle the container.

Requirements for people who sell fluorocarbon refrigerants

As of September 1, 1993:

- They must charge a minimum $25 deposit on all storage containers filled with a fluorocarbon refrigerant. They must take back every used container originally sold by them and refund the deposit.

As of January 1, 1994:

- They can only sell fluorocarbon refrigerants in a refillable or recyclable storage container to a wholesaler or a certified person. Retail sales to uncertified persons will not be permitted.
- They must keep a record of every sale of a storage container of fluorocarbon refrigerant for at least three years after the date of sale.

These requirements do not apply to manufacturers of fluorocarbon refrigerants who deposit the refrigerant directly into a tank vehicle or refrigeration equipment.

As of January 1, 1995:

- They can sell fluorocarbon refrigerants only in storage containers which are both refillable *and* recyclable.

Requirements for people who collect and handle used refrigeration equipment containing fluorocarbon refrigerants for disposal and recycling

As of January 1, 1994:

- They can only accept used refrigeration equipment (also known as "white goods") for dismantling, disposal and recycling if it displays a tag or notice signed by a certified person that it is empty of fluorocarbon refrigerants.
- They can dismantle, destroy or recycle a storage container that held fluorocarbon refrigerants only if it displays a tag or notice signed by a certified person that it is empty.
- They cannot accept for landfilling a storage container with a label indicating that it contains or did contain a fluorocarbon refrigerant.

Provincial action to reduce ozone-depleting substances

Under Ontario's reduction program for ozone-depleting substances, the following actions have been taken by the provincial government:

- Ban on CFCs in aerosols in 1989.
- Complete phase-out of CFC-blown foams by December 31, 1993.
- Mandatory collection of mobile refrigerants (car, truck, train air conditioners and refrigeration units) since July 1, 1991.
- Working with industry, established a system for the collection and recycling of spent refrigerants. The province amended the regulations in September 1990 to set up an administrative infrastructure for stationary and mobile refrigerant recycling.

The draft regulation banning the release of fluorocarbon refrigerants will come into effect in summer 1993; the training, certification, and handling requirements will start January 1, 1994. Further regulatory measures are planned to prevent the release of halons used in fire extinguishers and other ozone-depleting substances primarily used as solvents in the metal finishing industry.

Ontario was the first province in Canada to make laws which support the intent of the 1987 *Montreal Protocol for Substances that Deplete the Ozone Layer*, signed by more than 60 countries. The Ministry of Environment and Energy's goal is to reduce Ontario's use of CFCs from the 1986 level by more than half in 1993. In March 1992, the Canadian Council of Ministers of the Environment (CCME), representing all provincial, territorial and federal environment ministries, agreed to the elimination of the production of CFC molecules in Canada and their import into and export from Canada, by January 1, 1996.

CFCs AND THE OZONE LAYER

Chlorofluorocarbons (CFCs) are a family of long-lasting synthetic chemicals that cause damage to the ozone layer located 15-40 km above the earth's surface. The ozone layer screens out certain types of ultraviolet radiation from the sun. This radiation can cause skin cancer in humans and animals, disrupt crop growth and kill the phytoplankton food supply for fish in oceans. Over the past 20 years, the ozone layer has shrunk by an estimated one to three per cent, mainly because of the effect of the CFCs and other synthetic ozone-depleting substances containing chlorine and bromine compounds. The effect is made worse when the CFCs mix with volcanic ash.

CFCs were developed about 60 years ago as a substitute for ammonia in refrigerators. CFCs are used as coolants in refrigerators and air conditioners, as well as blowing agents in foam product manufacturing, as cleaning solvents for electrical components, and for use in aerosol sprays and hospital sterilization procedures (many of these applications have now been phased out in Ontario). Related to CFCs, halons are a group of chemicals that contain bromine. They are used almost exclusively in fire-protection applications.

FACTS AND FIGURES

- Ontario accounts for about half of the annual amount of the CFCs used in Canada. In 1986, the base year for determining future consumption levels, approximately 20,000 tonnes of CFCs were consumed in Canada.
- How CFCs were used in Canada for 1986 and 1989:

	1986	1989
Refrigeration & air conditioning	33 %	44 %
Foam	42 %	39 %
Solvent	9 %	12 %
Aerosol	12 %	0 %
Miscellaneous	4 %	5 %
Total	100 %	100 %

- The total stock of CFCs in use in Ontario as a refrigerant is estimated at 40,000 tonnes.
- In 1990, an estimated 11,100 tonnes of CFCs were released into the atmosphere from all sources in Ontario.
- CFCs have long atmospheric lifetimes of 70 to 100 years. Only about 6.4 % of the total CFCs emitted are destroyed by sunlight by the time they reach the outer parts of the earth's atmosphere.
- In 1992, about 270,000 home refrigerators were sold in Ontario. The total number of home refrigerators and freezers is about 5 million. As well, in 1992 there was a total of 600,000 window air conditioners and 1.1 million central air conditioning units in residential use in Ontario.

- An estimated 48,000 to 60,000 home refrigerators are thrown out every year in Ontario (including 12,000 to 15,000 in Metropolitan Toronto). An estimated 124 grams of CFCs per discarded refrigerator could escape into the atmosphere.
- An estimated 3.6 million cars and 500,000 trucks in Ontario have air conditioning systems. Approximately 90% of all cars sold in Ontario in 1992 have air conditioning units, most of which still use CFCs as the main coolant chemical.
- A recent Environment Canada survey of service stations in the Ottawa area found that 60 % of cars have negligible amounts of refrigerant in them when they are brought in for servicing; ie. the refrigerant has already leaked into the atmosphere. Approximately 1.3 kg of CFC-12 are required to fill the A/C system of a new automobile. The average car requires 0.4 kg per year for servicing.
- The Canadian Dermatology Association estimates that over the past 25 years there has been a 400 % increase in the number of skin cancer cases for men and a 250 % increase for women.

Public comments

Send written comments on the draft regulation to:

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